



# Afterthoughts

The Inverse Christmas List--High on the list of those things passionately not wanted is the radio modestly described in the flyer thusly: "Amazing new portable plays AM...FM... & TV!" In other words, you can hear the TV shows, though not seeing them. Now I generally turn off volume on many TV shows, and I suspect other people do too, so it seems to me there's commercial possibility in a nicely fabricated box with appropriate controls that would enable the owner both not to listen and not to see TV. Concurrently, that is. When your choice is that rerun of Father Knows Best or Art Forms of the Hottentots, you simply settle in, switch on your no-see/no-hear TV, and contemplate how much fun it is to miss all those neat shows.

\* \* \*

Some Of Us Have Been There--If you're more than forty, many of the current exhortations on conservation and energy give rise to a feeling of déjà vu. Growing up in the thirties, it became second nature to turn off that light when you weren't using it.

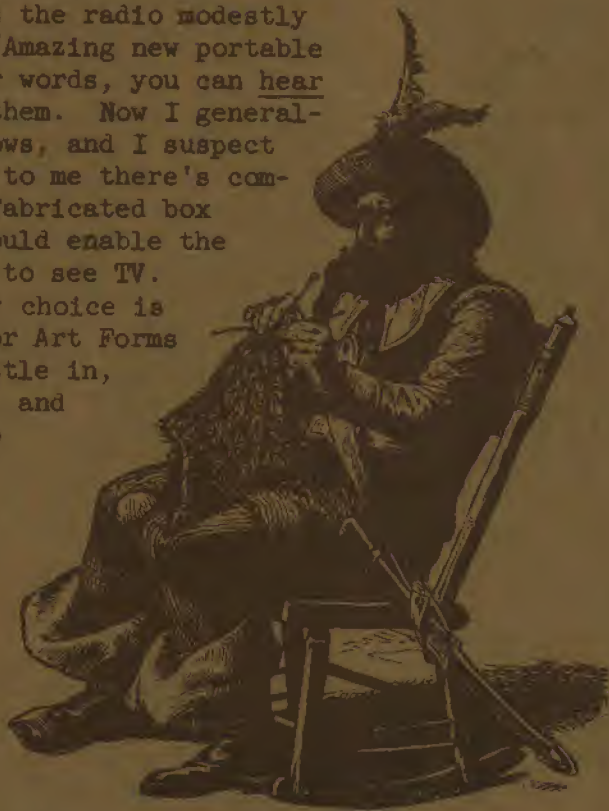
Indeed, there was an aunt in our family who maintained (darkly, of course) that it cost 2¢ each time you turned the light on, an innovative revenue producer that probably hasn't occurred to the electric companies. And while gasoline was five gallons for a dollar, automobile trips were no-nonsense affairs, except for the Sunday drive to the beach or to visit the family. There was little casual cruising. Then WW II came along with its urgent message for conservation, and even the most profligate spirits became inhibited under the spur of patriotism. It's taken most of us all the years since then to learn to relax a bit when Junior leaves the light on in his room and now, dammit, we have to return to that pinched life style.

\* \* \*

How's This For '74--There is only one way to achieve happiness on this terrestrial ball,  
And that is to have either a clear conscience,  
or none at all.

Odgen Nash

\*js



JOE FERGUSON (7518) came up with an idea which is not only saving energy — oil and electricity — but money as well, some \$14,000 a year. His experience with the boilers, part of the vacuum system of the HEAT facility in Area III, led him to believe that boiler pressure could be lowered during the facility's standby time. After checking system operational requirements, Joe's idea was adopted. Instead of four burns per hour in the boiler, standby burns were reduced to only one burn every hour and a half, saving 69,000 gallons of oil per year. With two hours notice, Joe can get the boiler pressure up to test requirements.

## Retirement Income Plan

Each year Sandia Laboratories files with the United States Department of Labor a report on the Retirement Income Plan. A copy of this report, as well as a description of the Retirement Plan is available for examination at your department manager's office. Copies of these documents for retention may also be obtained through your department manager's office.

## Cover Art

Tillie Pierce of Technical Art Division 3155 is the artist who designed our Christmas cover. The design is abstract, but somewhere in it there's a "Noel." Can you find it?

## LAB NEWS

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### SANDIA LABORATORIES

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&

in livermore lorena schneider does all

## Sandia Participates

# NASA/AEC Magnetic Field Mapping Experiment Successful

"Completely successful" is the way Ed Hansen, supervisor of Experiment Projects Division 1253, describes a recent NASA/LASL/University of Alaska/Sandia joint experiment to map the earth's magnetic field. Some important new data may result.

Mapping was done by photographing a cloud of ionized barium particles explosively injected into the magnetic field at altitude by the payload. The payload was carried by a Black Brant IV A rocket supplied by NASA and launched from Poker Flat Range, Alaska. Skylab III astronauts photographed the barium streams which traveled south along the lines of magnetic force to their conjugate point south of New Zealand.

At Poker Flat, Ed headed the Sandia team responsible for the rocket payload system which positioned and explosively injected the barium along the field lines in the magnetosphere. Sandia was also responsible for the barium fuzing and firing system, telemetry and assembly.

Another team of Sandians, headed by Al Hutters, supervisor of Test Operations Division 1252, was on board Sandia's NC-135

flying laboratory which also photographed the barium streams. The aircraft operated out of Hickam AFB, Hawaii.

Sandia and LASL have performed similar experiments in the past, but this was the first time that photographs have been made of the barium streams from outer space. The data will provide new insights into the earth's geomagnetic field lines.

The barium was vaporized and driven along the magnetic field at high velocity by the shaped charge explosive. The particles, ionized by the sun's ultraviolet rays, were trapped by the field. Here they spiraled toward the south around the geomagnetic field lines, thus providing visible definition of the field. • dg

## Garcia Named to C of C Board

Bob Garcia, manager of Employee Relations Department 4230, has been appointed to the Albuquerque Chamber of Commerce as a member of the Board. Bob's term of office is one year, and the term begins in January 1974.



*He shall come down like showers upon the fruitful earth,  
Love, joy, and hope, like flowers, spring in His path to birth;  
Before Him, on the mountains, shall peace, the herald, go,  
And righteousness, in fountains, from hill to valley flow.*

*(from an old hymnal)*



## About That Comet

Resident astronomer Grover Hughes (9474) sent us the following (dated Dec. 5) in response to our inquiry:

"Comet Kohoutek is still too faint for unaided eye viewing, but is an easy object to pick up with 7x50 binoculars. This morning, it was 16 degrees below the bright star Spica, which is the prominent bluish-white star in the southeast morning sky. The appearance of the comet is that of a diffuse roundish patch of light, about 1/10 of a degree in diameter, with a fainter tail which points up and to the right, and which is about one degree in extent.

Each successive morning from now until perihelion passage on Dec. 28, Comet Kohoutek will appear at about the same point in the sky, but some one degree nearer the sun each day. Two effects result:

1. The intrinsic brightness of the comet will increase day by day, making it easier to see.
2. The altitude of the comet above the horizon at sunrise will decrease each day, making it harder to see against the ever-lightening dawn sky.

I cannot predict the optimum date for viewing, but I consider it unlikely that the comet will get substantially brighter, relative to the background sky, than it is right now.

After perihelion, the comet should be an easy object for unaided eye viewing, in the west, after sunset. The best period of time will probably be mid-January."

s/ Grover Hughes

## Yes, Virginia,

there will be Out-of-Hours courses at Sandia next semester. The change to a half-hour lunch period means that two-hour classes will meet two to four times a week, three-hour classes three to five times, depending on instructor and course. Each class will run 30 minutes beginning at either 11:45 a.m. or 12:30 p.m. More information, including courses to be offered, is in the Spring '74 Catalogs available during the last week of this month in the yellow boxes near the gates. Some problems associated with the lunch period change can't be anticipated, but the people in Education and Training 3131 will do their best to solve them.

## Graves Replaces Camm At AEC

The Atomic Energy Commission has announced the appointment of Major General Ernest Graves, USA, as Assistant General Manager for Military Application. General Graves succeeds Major General Frank Camm, USA, who has been reassigned by the Army.

Upon his departure, General Camm wrote to President Sparks about his association with the Labs. Portions of that letter follow:

"The contributions of your laboratories have enhanced significantly the safety and reliability of our nuclear weapons stockpile and have been of unusual value to many national programs. The studies conducted and the hardware developed to ensure that our nuclear weapons can be used only when authorized and to deny their use to unauthorized personnel are especially important to a stable and peaceful world. You continue to be one of the world leaders in the development of small, reliable electronic systems. Your testing program and simulation efforts add significantly to confidence in our nuclear weapons systems, especially

those in our strategic deterrent.

I have observed especially the ingenuity and resourcefulness of the personnel of both Sandia Laboratories in addressing each task and in obtaining optimum solutions. Please convey to them my respect and appreciation.

Sincerely,  
Frank A. Camm  
Major General, USA  
Assistant General Manager  
for Military Application



**LET'S CONSERVE** — Not air, but tires and gas. Get yourself a pressure gage and check your tires every two weeks or so. Inflate two to three pounds above lowest recommended pressure — they'll ride a little harder but will last longer and give better gas mileage.

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## Speakers

Marshall Meyer (8312), "Impact Welding Using Magnetically Driven Flyer Plates," Fourth International Conference, Center for High Energy Forming, Denver Research Institute, Vail, Colo., July 9-13.

Ted Dellin (8341) and C.J. MacCallum (5223), "Analytical Predictions of Photo-Compton Emission Currents," IEEE Annual Conference on Nuclear and Space Radiation Effects, Logan, Utah, July 23-26.

Martin Abrams (8111), "The Effects of Semi-Transparent Crystals," ASME 14th National Heat Transfer Conference, Atlanta, Ga., Aug. 5-8.

John Kryvoruka (8362) and Bob Phillips (8363), "Closed Loop Preflight Qualification Testing of a Reentry Vehicle Roll Rate Control System," Annual American Institute of Aeronautics and Astronautics Guidance and Control Conference, Key Biscayne, Fla., Aug. 20-22.

Bill Ashurst (8364), "Dense Fluid Transport Via Non-Equilibrium Molecular Dynamics," Gordon Research Conference on Chemistry and Physics of Liquids, Plymouth, N.H., Aug. 17.

Ron Musket (8334), "Ionization and Auger Electron Spectroscopies of Si-Contaminated, Be Surfaces"; Walt Bauer and Ron Musket (both 8334), "Oxide Thickness Determinations on Er(D,T) Using Proton and Electron Induced X-ray Fluorescence"; Bill Swansiger, Walt Bauer, Ron Musket and Larry Weirick (all 8334), "Effects of Surface Oxides on the Permeation of Hydrogen Through 309S Stainless Steel"; George Thomas and Walt Bauer (both 8334), "Helium Resonance and Electron Microscopy of CTR Materials Candidates"; and Wes Estill (8312), Hilary Jones (8314), and Don Benthusen (8342), "Pictorial Display of Elemental Distribution in Materials Created from Computer Processed Microprobe Data," Fifth Annual Conference on Surface Studies, Golden, Colo., Sept. 5-7.

Perry Lovell (8252), "Radiation Protection: How Safe is Safe?," Rotary Club meeting, Oakland, Sept. 10.

Rudy Johnson (8312), Jack Dini (8312), and Stan Zehr (8313), "On the Embrittlement of Uranium and U-0.8 Ti Alloy by Hydrogen and Water"; John Brooks (8312) and former Sandian Tony Thompson, "Hydrogen Compatibility of Joining Processes for Dispersion-Strengthened Materials," American Society of Metals and Processing Research Institute of Carnegie-Mellon University Joint Conference on Hydrogen in Metals, Seven Springs, Pa., Sept. 25.



**LOOKS PRETTY GOOD** — Over 250 Sandians were on hand for Sandia/Livermore's noontime Christmas buffet, this year's money raising project to help underprivileged children in the local area. Proceeds from the project — some \$200 — will be distributed by the Livermore Emergency Fund Center. Thanks are extended to the Christmas Committee (from left), chairman Joan Hall (8180), Paul Coronado (8334), Linda Armijo (8312) and Annette Hicks (8341), and to all who contributed food or otherwise helped.

# LIVERMORE NEWS

VOL. 25, NO. 25

LIVERMORE LABORATORIES

DECEMBER 14, 1973

## 'Don't Panic' Advises State Metric Committee Chairman

"Slowly, but surely, a modern metric system of weights and measures is being adopted here," says Jack Wilson (8413), chairman of the California Metric Committee formed under the auspices of the U.S. Department of Commerce's San Francisco Field Office.

Jack is referring to an announcement made late this summer by the California education department that the next textbook changes, scheduled for 1976, will incorporate metric units.

He's also referring to legislation passed by the California State Assembly and slated for action by the State Senate when it reconvenes in January. The bill calls for establishment of a commission and advisory council for the implementation of the metric system in California. Similar national legislation is currently pending which would sanction the common use of metrics.

"Whether there is legislation or not, we will go metric because of the dramatic increase in its use internationally," claims Jack. "In fact, all countries in the European common market have agreed that starting in 1984 only those products of total metric design will be accepted for trade. So, unless we convert, our balance of trade will suffer more than it already has.

"Of course," he adds, "in some respects we've already made the changeover. Metric has been in common use in the pharmaceutical industry since 1958, the optical and medical professions are predominantly metric and many large companies, including the automobile manufacturers, are converting on all new designs. Pre-packaged food has customarily carried dual dimensions since 1968, and we are all familiar with 35, 16 and 8mm photographic equipment."

Jack says the influence of the metric system can be seen within the AEC complex with the establishment of the ad hoc

metrication committee of the Interagency Mechanical Operations Group (IMOG). There have been several successful pilot projects in metric design to test the availability of required parts, and at SLL some of the major component development work has been full metric design.

When asked what the widespread adoption of the metric system will mean in everyday life, Jack quickly commented, "Don't panic — it's not going to be as difficult as everyone seems to think. Actually, we're just using different terms to express the same things. For example, there's a sign off the skyway in San Francisco advertising the distance to an exit where you can get a commercial loan. About two months ago the nine mile figure was changed to 15 kilometres. It's still the same distance to the loan company (but the interest rate has probably changed!).

"The paint industry is in the process of changing over and shortly you'll be buying paint by the litre instead of the quart. Ironically, it will probably be in the same size container except that now the 'head room' will be filled. The price, no doubt, will be a little higher, so you'll think you're paying more for the paint, but you'll be getting more for your money.

"For women it may be traumatic when they shop for a dress and find they're now a 42 vs. the old 14. In most cases, though, the adjustment will be automatic. The average person didn't take much notice when the speedometer of a 1972 automobile carried two scales, one with miles, the other with kilometres.

"Like speaking a new language," concludes Jack, "you'll need to think a new way. But at local stores, it will be enough to remember that a metre is about three and a half inches longer than a yard and that a kilogram is two and a fifth pounds."

A few other comparisons:

English System	Metric System
6-foot man	1.8 metres
125-pound woman	57 kilograms
21-inch TV	53 centimetres
1 mile	1.6 kilometres
1 gallon of gas	3.8 litres
Man's size 16 shirt	size 40
Man's size 7 hat	size 56
98.6 degrees F.	37 degrees Celsius
36-24-36 (in inches)	91-61-91 (in centimetres)

## Congratulations

Mr. and Mrs. Mose Mouton (8256), a daughter, Mosette LaVel, Nov. 12.

## Sympathy

To Mike Lovato (8257) on the death of his mother-in-law in Albuquerque, Nov. 24.

To Hank Stratmann (8257) on the death of his sister in Kansas City, Nov. 25.

To Jim Gruver (8434) on the death of his sister in San Francisco, Oct. 30.

To Bob Carrell (8183) on the death of his mother in St. Paul, Minn., Nov. 1.

## Authors

Bill Ashurst (8364) and W.G. Hoover (LLL), "Argon Shear Viscosity Via a Lennard-Jones Potential with Equilibrium and Nonequilibrium Molecular Dynamics," PHYSICAL REVIEW LETTERS, Vol. 31, p. 206 (1973).

Ron Musket and Walt Bauer (both 8334), "Detection of Proton-Induced C(K) X-rays with Si(Li) Detectors," NUCLEAR INSTRUMENTS AND METHODS, Vol. 109, p. 449 (1973).

Ron Musket and Walt Bauer (both 8334), "Determination of Gold-Layer and Dead-Layer Thicknesses for a Si(Li) Detector," NUCLEAR INSTRUMENTS AND METHODS, Vol. 109, p. 593 (1973).

Ray Mar (8313), N.D. Stout (LLL), and W.O.J. Boo (University of Mississippi), "The High-Temperature Enthalpy and the Enthalpy of Fusion of Boron by Drop Calorimetry," JOURNAL OF HIGH TEMPERATURE SCIENCE, Vol. 5 (1973).



# Impressions of Christmas By Children of SLL Employees

(others on display in the lobby of building 911)



Nicole Peterson, age 6, mother Norma Peterson Watson (8212)



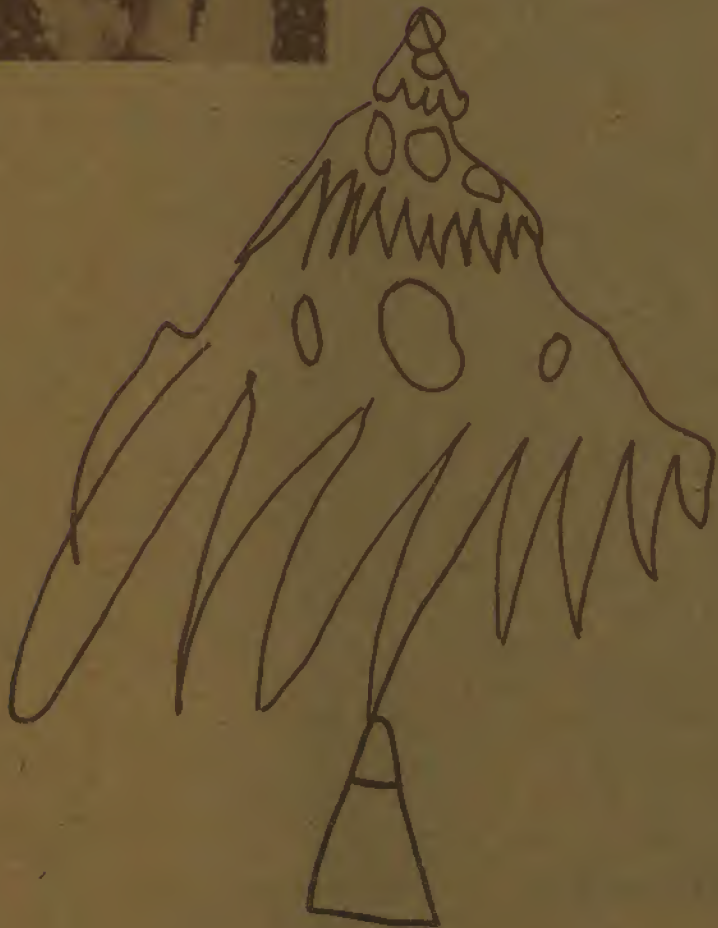
Michelle Robert, age 8, father Moe Robert (8257)



Carrie Loll, age 4, father Marv Loll (8363)



Paul Murar, age 8, father Frank Murar (8345)







OUT OF the developer tray and into the foyer in Bldg. 802 went Marshall's photos.

## 802 Photo Display By Marshall Berman

Photographs currently on display in the elevator foyer of Bldg. 802 are the work of Marshall Berman, a physicist in Radiation Division 1112.

Marshall started photography as a hobby about eight years ago, has mastered the craft to the point that he's experimenting with color processing, infrared film and far out images. Still, the mark of the advanced photographer is the brilliance of his black and white printing, and Marshall qualifies as advanced.

"Photography is much more than technique," he says, "but mastery of the

technique is necessary before you have total creative control."

Marshall's control is obvious in all of the photos, particularly in the abstract and semi-abstract images where the concept came first, then the execution.

"I find that there is much satisfaction in creating my own images — such as controlling the color shifts in infrared film — but magnificent scenics a la Ansel Adams have an incomparable beauty of their own. I keep an open mind. Photography is such a flexible and broad medium that one can pursue it for a lifetime without exhausting its potential."

### Fireplace Safety

## Where's the Bearskin Rug?

Vernon Duke (7551), Sandia fire prevention engineer, is the first man to admit that fireplaces are nice. He enjoys all the good things associated with the fireplace — hearth, home, warmth, romance, etc.

But Vern's job is to worry about fire prevention and now with the energy crisis all around us he figures folks are going to use their fireplaces more and more. So he passed along some sensible ideas about fireplace safety.

—Heavy use of a fireplace will coat the chimney with soot and that soot might ignite — a roaring, blowtorch-like fire will result, causing a plume of flame and hot embers to shoot upward from the chimney, creating a hazard to roof and nearby trees. Closing the flue will stop the soot fire in the chimney but fill your house with smoke. Charlie Byrne (7115), volunteer fire chief for the Manzano Mountain area, recommends closing the flue for about 30 seconds and then opening it slowly to the point where the fireplace receives minimum necessary draft. This will shut off oxygen to the fire in the chimney and

stop it. Better yet, clean the soot out of your chimney before the fire. Good luck on a dirty but necessary job.

—Spark arrestors are handy devices resembling cages that can reduce the hazard of embers escaping from a chimney. Made of stainless steel, these screen cages prevent anything larger than half of an inch from escaping out of the chimney, but Vern emphasizes that screen openings should be at least 3/8 inch square and that the arrestor free area should be four times greater than the flue area. This rule assures that the arrestor will not cause toxic gases to back up from the chimney into your living room.

—The room should have adequate fresh air ventilation, again to prevent toxic gases from accumulating.

—Fireplaces should have screens. Never leave an open fire unattended without a screen in place.

—And, finally, on days when the fireplace is not in use, keep the damper closed. You'll conserve heat. • dg

### Recreation Notes

## FUN & GAMES

**Chess** — Sandia Labs Chess Club has its next regular meeting Monday night, the 17th, at 7:30 in the El Dorado Room of the Coronado Club. Any person interested in the game is welcomed.

\* \* \* \*

**Sandia Runners Association** — The half-hour lunch period is a kick-in-the-head for that large number of runners who did their thing during the noon hour. The alternatives: running after work — the gym stays open 'till 7 and light is adequate 'till 5:15 or so. Assuming a return to daylight saving time, the light problem goes away, except if you're one of those hardy types who runs before coming to work. A few members are running home from work, which takes a little planning clothing-wise and getting-to-work wise. If you try this, carry a dime in case you run out of steam and need to be picked up! And, of course, the weekends remain available for you to run to your heart's content. In this moment of slight adversity, just keep in mind those inspirational words "When the going gets tough, the tough get going," uttered by old what's-his-name.

\* \* \* \*

**Sandia Bicycle Association** — Chairman Sharla Vandevender (4732) of the City/County Bikeway Advisory Committee reports that the group's Bikeway Plan is just about ready for presentation to city and county planning commissions. The 100-page Plan recommends some 180 miles of bikeways in the county, divided more or less equally into bike trails (totally separated from road ways), bike lanes (a portion of a road way designated exclusively for bikes), and bike routes (a road way shared with vehicles). The Plan also includes a new bicycle code for the city that is the result of staff work with APD and the city attorney. And a further major element of the Plan is a description/recommendation for three safety education programs aimed at bicycle riders according to age — one for second graders, one for adults, and so on.

In the meantime, SBA'ers can take satisfaction from being Official Good Guys in this time of gas shortages. It remains to be seen if any effort is made to actually improve cycling conditions and thereby get even more people on bikes.

\* \* \* \*

**NASTAR Races** — Beginning Dec. 22, Sandia Peak will have NASTAR ski races every Wednesday and Saturday. That's the kind where you get a handicap depending on age and ability so everyone has a chance to win. Contact Carla at the Ski School for more info.

### Jim Boespflug Named Reserve Lt. Colonel



Jim Boespflug, a development engineer in Switching Devices Division 2331, has been promoted to the rank of Lieutenant Colonel in the Army Reserves. An enlisted man during his active military duty, he received a commission

shortly after entering the Reserves. Jim is a graduate of the Armor Officers Career Course and the Command and General Staff College. Currently he is Director of Personnel and Administration for the 156th Support Group at KAFB.



IN LAB NEWS last time we carried a photo of Don Cotter that friends say was lifted from his high school year book. Anyhow, here's the real Don Cotter, now Chairman of the Military Liaison Committee as well as Assistant to the Secretary of Defense. President Sparks and other Labs people briefed Don and the Committee during a recent visit.



# Holiday Cooking — A Family Affair

One of the many enjoyable activities of the holiday season is eating; but for some it may be even more fun to prepare all that good food. And that's the way it is at the Pete Gallegos (2336) home.

Traditional Christmas fare at Pete's house is home made tamales, posole, red chili, and biscochitos. "We might add other foods — chili con queso, chili rellenos, etc. — but we always have a five-gallon pot of posole, red chili with pork, 20-30 dozen tamales and lots of biscochitos," Pete says.

Pete's wife Rita explains, "Early on the day before Christmas, I start cooking the posole and red chili. About 7 in the evening the food is ready (the tamales and cookies were made earlier and put in the freezer). We light the luminarias and go to midnight Mass. Afterwards our friends and family gather at our home and we eat! I never fix any other food and the eating continues throughout Christmas day."

"We've cooked these foods every Christmas since we've been married," Pete says. For two and a half years when he was in Field Test, Pete was stationed in Lancaster, Pa. "Our first Christmas there was fun," Rita says. "Pete's father came to spend the holidays with us. He brought along a big trunk loaded with all the ingredients I needed. We invited our neighbors to have a traditional Mexican Christmas dinner with us. They had never tasted food like that, but they liked it, and they came back every year for the three seasons we lived there." One German couple liked the food so well that Rita taught them how to make tacos, and after returning to Albuquerque used to send them tortillas.

"While we lived in Lancaster," Pete says, "we had a pretty good supply line. When any of my Sandia friends made a trip to the east, they stuffed their briefcases full of tortillas and a few hours later they were in my freezer."

Pete was born in Old Town and he recalls how his mother used to grind her own chili on a metate, and put the green chili out on a board in the sunshine to dry. "Mexican cooking today isn't nearly as inconvenient and time consuming as it used to be," he says. "Consider packaged posole, packaged corn husks, masa harina, the freezer and the blender. Everyone else thinks the blender was invented to make milkshakes, but we know it's really for making chili."

Pete offers this tip — freeze jalapeno peppers in a ball. When you want a taste of hot pepper, just grate off what you need and toss the ball back in the freezer. Rita adds this advice on spices. "I use cumin seed, coriander and oregano in all my recipes, so I mix equal amounts of the three spices and keep them in a handy container."

Rita gave us the following recipes. You may already have a favorite family recipe for these foods, but if you don't try these. Pete says Rita is a terrific cook, "and she makes a spiced tea which we also serve during the holidays; the only way I can improve on it is to add a little vodka." • nt

## POSOLE

- 2 lbs. packaged posole
- 5 lbs. lean pork (cube in 1" pieces)

Wash posole very thoroughly until water comes out clear. Put into kettle with water to cover posole and bring to boil. Simmer in covered kettle until posole bursts, about 3 hours.

Cook meat about 1-1/2 hours at slow simmer. Mix with posole when corn is cooked. Add about 1 cup of broth from meat. Add spices (1/2 tsp. each cumin seed, coriander and oregano) and salt to taste.



PETE AND RITA GALLEGOS, with daughters Phyllis and Elaine, all pitch in when it's tamale making time. Pete mixes the masa and Rita cooks the chili and then all hands make the tamales. Their son Steven is in the Navy — his first Christmas away from home and the production line.

## RED CHILI WITH PORK

- 3 lbs. lean pork cut very fine
- 2 pints frozen red chile
- 1-1/2 tsp. spices

Sauté meat until brown; add garlic powder and salt to taste. Add thawed chile and spices. Cook for about 45 minutes. Ready to serve.

## BISCOCHITOS

- 5-1/2 cups flour
- 1-1/2 cups sugar
- 3 tsp. anise
- 1 lb. pure lard
- 5 eggs
- pinch salt

Mix dry ingredients, add eggs and work into lard that has been whipped until creamy. Spread about 1/4" thick and cut into fleur-de-lis. Shake into sugar and cinnamon mixture (3 tsp. cinnamon, 1/2 cup sugar). Bake 12 minutes in 325° oven.

## Retiring



Ralph Sanders (7553)



FRANCES PASS, wife of retired Sandian Richard Pass, does her own thing in her own way, and she does a lot with just a little. Each month she gives 10 percent of her income for charity — not just one organization, but any she feels might benefit from her efforts. Those efforts include sewing, knitting, cooking, and recently, reading of a local group in need of food, she checked with them and used the \$20 in her fund to purchase sugar and powdered milk. In the case of the South Highway 10/14 Project at Sandia, she bought yarn and material. "I call this my 10/14 work," Frances says, "and each time I finished a pair of mittens I thought 'one more little pair of hands will be warm this winter.'" Thanks to Frances, the Project now has 24 pair of mittens, some stocking caps, aprons and other items to add to the Santa Claus bags to be distributed later this month.

## Sympathy

To David Schuster (5314) on the death of his father in Miami, Fla., Nov. 17.



# Some Zingers & Plaudits, A Few Ho-Hums

Every year or so LAB NEWS surveys a cross section of the Sandia population to get their reaction to the paper. This year we surveyed 10 percent of Sandians and asked for honest opinion in exchange for honest effort to reflect readers' wishes in the kinds of things that the LAB NEWS reports.

Well, troops, there won't be many changes. Gratifying to the staff was the finding that most respondents think LAB NEWS is on the right track. That doesn't mean that we didn't get our lumps. We did. We asked for comment and comment we got, much of it pungent and, above all, direct:

*I feel that the paper serves only the higher echelon at Sandia, not all of the people.*

—We try, we'll try harder.

*You may be underestimating the technical intelligence of most of your readers.*

—We walk a tightrope between way-out technical and layman technical.

*I look forward to reading it, but I don't feel I've missed anything if I fail to read it.*

—Friend, you started out great and then it was all downhill.

*Have never read a layoff article or state-of-the-Labs report which proved to be accurate.*

—You're confusing prediction with assertion. Company presidents lay no claim to infallibility when they're asked to give an estimate of the future.

*How about more articles on Sandians doing work in the community in civic and charitable activities? Mostly these are unpaid and thankless jobs.*

—Sure. But someone has to let us know — the person involved frequently is diffident about revealing his involvement.

*Drop Milestones — the service award photos. They're a waste of space.*

—Tried it once. Like to see our lumps?

*Those poor deformed girls on the back page don't really send me.*

—No comment.

*Let's have a little male cheesecake.*

—Still no comment.

*Dig out more news about what Sandia management is doing to insure survival of the Labs.*

—A frequent comment. We're for it.

*How about more letters to the editor?*

—Feedback is a new feature since the survey, but LAB NEWS still welcomes thoughtful letters.

*The paper on which it is printed seems a little plush for a newspaper but perhaps it is not as expensive as it looks.*

—It isn't. In these days of inflation, LAB NEWS costs less to print now than it did four years ago. We'd use recycled paper if we could get it.

*Drop classified ads.*

—Can't do that. According to the survey, the ads are our best read feature. Doesn't do much for the ego, but at least we're providing a service.

*Enjoy the Vista New Mexico articles.*

—Thanks. We enjoy writing them.

*More time should be spent investigating where credit is due on some of the technical articles. Many contributors are overlooked.*

—Ouch. You're right and, within reason, we list those making significant contributions to a project. Sometimes, there's a problem with "significant".

*How about coverage of the overseas Coronado Club trips?*



SURVEY revealed some readers drop everything to read their LAB NEWS.

—After the tours, the group gets together to show pictures, movies, etc. You could attend the meeting. Some people feel we overdo Club news.

*Bill Laskar photos are great!*

—Not only that, he's a nice guy.

*I especially like the Afterthoughts and think they should be included each time.*

—Thanks. But I don't always have afterthoughts.

*Why don't you keep your darn opinions to yourself.*

—You could too, but then I asked for yours.

*Authors and Speakers: Ho-hum.*

—Obviously neither author nor speaker.

*Since my name appears frequently in Authors and Speakers, I think it's the best feature in the paper.*

—An honest man. Keep writing papers and we'll keep listing them.

*Give management no more space than they deserve.*

—A bimonthly judgment performed by our Department of Exquisite Sensitivity.

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Livermore readers predictably wanted more Livermore news. And one suggested dropping the classified ads and, instead, issue a separate ad bulletin from time to time. Another commented "... quit using so much space on pictures of people," a step not likely to arouse much enthusiasm in those who are pictured. Bill Jamieson, Livermore Public Relations, is all for more Livermore news, as we are, and urges people there to call or drop by the news items.

As in previous surveys, the back page photo brought a lot of comment — some think it's the best feature in the paper, another guy won't even take LAB NEWS home because his wife flies into a rage everytime she sees the cheesecake. (Most people do take the LAB NEWS home, by the way.)

Do we have an editorial position on this subject? The answer is yes. By any contemporary standard our cheesecake is modest indeed, more so than, say, the latest Sears Roebuck catalog. Or Time magazine, or Vogue, or a number of films being shown on TV in prime time. Since June we've run boy/girl pictures in this feature, the object being to show an attractive couple relating in some way to an upcoming Coronado Club function. With a readership as large as that of LAB NEWS it's safe to predict some raised eyebrows, whatever the exposure of the female member of the picture. If some small number criticize, this is their right and their sensibilities here are appreciated and understandable. But they are not necessarily to be deferred to. A paper whose entire content must be congenial to all readers isn't much of a paper.

Our thanks to those who took the time to complete the survey. We liked this comment most (we think): "Your paper is OK. I like to read it regardless." •js

## Congratulations

Mr. and Mrs. David Miller (5323), a son, Michael Jon, Nov. 28.

Mr. and Mrs. Dale Berg (DSP, 5645), a daughter, Nov. 26.

Mr. and Mrs. John Sundberg (1613), a son, John Albert, Nov. 30.



# Credit Union Reporter

By Bill Prekker  
Chairman  
Education Committee



## Tax Time Approacheth

Credit Union members who want a copy of the Commerce Clearing House's authoritative U.S. Master Tax Guide, the text for the Credit Union's tax course, can get one by registering in advance for one of next year's courses. Send name, account number, phone number, and a check for three dollars (made out to Sandia Laboratory Federal Credit Union) to C.L. Turner. If you wish to attend the eight-week class next spring or fall, you will pay an additional seven dollars then. The Guides will be ordered and distributed as they come in; please allow four weeks for delivery.

Good old 1040's, the individual income tax forms, are also available to members at the Credit Union.

\*\*\*\*\*

## 1973 A Three-Quartered Year

A recent ruling by the Internal Revenue Service reversing their previous stand means a change in the reporting of dividends for tax purposes. Previously, dividends were posted for a quarter on the last day of the quarter. IRS has now ruled that these dividends are payable on the first day of the following period and are taxable in that period. Therefore, the dividend for the last quarter of 1973 will be paid and will be taxable in 1974. This year's statement will thus show only three quarterly dividends. Next year's statement will again reflect four quarterly dividends.

\*\*\*\*\*

## Head for the Counter

The Credit Union has always transferred shares to pay off a single payment loan on the last day of the quarter after the posting of the

dividend. Now the National Credit Union Administration has ruled that this would mean loss of dividend for the entire quarter. Therefore, payoff of single payment loans by transfer of shares will be made on the first day of the following quarter. Those wishing to obtain the tax benefits of the interest payment for the last quarter of 1973 on single payment loans should pay the interest over the counter. It will then be included in the 1973 statement.

\*\*\*\*\*

## A Sign of the Times

Because they use less gas, the Credit Union will now make loans on motorcycles which are licensed and titled. The annual interest rate will be 10.8% with a maximum repayment period of 24 months. Loan amounts are 75% of list price on new units and, for used bikes, cash value as shown in the Blue Book for motorcycles (available in CU).

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## Now It's 8%

Interest rate on first mortgage real-estate loans (improved or unimproved) has been increased to 8% per annum as of Dec. 1. The repayment period and amount which may be borrowed remains unchanged.

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## Your Very Own Calculator

Credit Union members can gain a group discount on Hewlett-Packard pocket calculators, models HP 35, 45, and 80. The HP 35 lists for \$306 and will go for \$251 to \$263, depending upon the number ordered; HP 45 and HP 80 list for \$410 and will go for \$336 to \$353, again depending upon the number ordered. Bring your \$25 deposit to the Credit Union before Dec. 31; full payment will be due when the calculator arrives — before Jan. 31, 1974.

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## Whose Money?

Everybody's Money, the Credit Union magazine for consumers, is available at no charge, but the supply is limited. Pick one up while they last at the office.

\*\*\*\*\*

## And Finally

The Credit Union will be closed Dec. 24 and 25. Merry Christmas, everyone!



ARRANGEMENT for studying acoustic emissions from electrical switching of amorphous (glass) semiconductors. The rectangular glass chip is mounted on a quartz transducer (disk), which is about the size of a dime. The dark path between the two electrical leads is the filamentary region caused by heating during the switching. Two electrical leads (lower right) are connected to opposite sides of the transducer to record acoustic emissions.

## Acoustic Emission Being Used to Study Glass Semiconductors

Acoustic emission is being used at Sandia Laboratories as a new means of studying the switching characteristics of amorphous (glass) semiconductors.

The rapid switch from poor to good electrical conductance is probably the most important property of amorphous semiconductors planned for use in electronic devices. Results of the Sandia experiments provide information about the switching process and the integrity of the glass after switching.

Acoustic emission — the generation of noise by a material undergoing a change in structural character — is frequently used as a nondestructive testing tool for detecting flaws in structures such as bridges, pressure vessels and aircraft. However, the Sandia experiment is one of the first uses of this tool for studying the physics of a system.

The tests show that when bulk samples of three different compositions of chalcogenide glasses are switched, they emit a burst of acoustic signals several microseconds before the rise of current in the glass. This emission appears to be associated with the initiation of the switching process and may be a compressive wave produced by very rapid heating in a small filamentary region in the glass.

The filamentary region also provides a low resistance path through which the sample current is channeled. The current and the filamentary region continue to grow as heating causes the surrounding material to change to a low resistive state. The ultimate size of the filament is related to the maximum current allowed by the experiment.

Other acoustic signals of a somewhat different character are also emitted during the switching cycle. They show a strong correlation with both microscopic and macroscopic cracking in the sample.

The study was conducted by Alan Beattie of Nondestructive Testing Division 9352; Ralph Johnson, supervisor of Sandia's Electrical Transport Division 5155; and Rod Quinn of Solid State Materials Division 5154.

PSYCHO-CYCLIST — The Itinerant Idiot has done it now — squashed guard Roy Brett (9550) when the bike brakes failed at Gate 4. Don't take chances; walk your bike through the gate.





# New Mexico Territory and the Overland Mail

Before New Mexico was granted territorial status in 1850, residents who received letters or newspapers must have felt that it was a grand occasion. Indeed, until the advent of the railroad 30 years later, mail delivery in the Territory was sporadic. It depended upon the weather, the amount of available grass, and the vagaries of frontier life.

In Spanish Colonial days a communications route existed between Santa Fe and Chihuahua, and as early as 1787 a route was opened between Santa Fe and San Antonio. After William Becknell opened the Santa Fe Trail in 1821, mail from the east was carried by trappers, traders, and wagon trains. Following the Mexican War (1846), private mail was sometimes carried by military couriers.

The Gila Trail in the southern part of the Territory, which included present day New Mexico and Arizona, had been used off and on for years. The Apaches traveled it to get to the Gulf of California where they found the seashells so important in their religious ceremonies. A few Spaniards followed the trail all the way to the west coast. American trappers from Taos, including Kit Carson, traveled down the Rio Grande, then west through the Mimbres and Mogollon Mountains to the Gila River and on to San Diego and Los Angeles. Kearny and his Army of the West traversed the Gila Trail, followed by the Mormon Battalion.

But the hazardous trail through the heart of Apache country was still relatively unknown until suddenly in one year (1849) more than 8000 people came west over the Santa Fe Trail, then south along the Rio Grande to about present day Las Cruces, then west through the Territory to the fields of California. Other trails leading west across the continent dumped thousands of people into California and they began clamoring for statehood and for a scheduled overland mail service.

During the next few years, mail contracts were granted, stagecoach lines set up, and the business of trying to overcome tremendous odds in order to deliver the mail commenced.

The overland mail service demanded by Californians finally became a reality in 1857



OLD ENGRAVING depicts mail stage departure.

One of the most difficult portions of the route was between Yuma and San Diego, where passengers left the coaches and rode mules for 180 miles, resulting in a new name for the line — The Jackass Mail. The entire route was dangerous: Apaches were active between Tucson and the Rio Grande, while the Comanches in Texas raided relay stations for horses and stage mules. A recipient of a package delivered via this route noted in his journal, "... The dangers of this road, however, justified any price for such matters ... in fact from El Paso to San Antonio is but one long battle ground."

Passenger fare was \$200, including meals on the road and 30 pounds of baggage, except for blankets and firearms. Additional baggage was \$1/pound. Postage was 20 cents an ounce but that ounce cost the government \$60-\$65 to deliver. The Jackass Mail never really flourished; the contract for the service had been a political ploy of southerners to bind the Territory to the slave states. Opponents argued that even though the route was open during the winter months, it was a waste of money because the area was so thinly populated, and that emigrants could be better served by using existing overland routes farther north. As one eastern correspondent wrote, it was a route going "from no place through nothing to nowhere."

with the establishment of the San Antonio-San Diego Mail Stage Line. Getting mail from the east to San Antonio was no problem, but getting it from there to the west coast was a big undertaking. The SA-SD stage line was awarded a four-year contract at approximately \$150,000/yr. to provide semi-monthly service, allowing 30 days for each trip, over an established route (the Gila Trail) totaling 1475 miles. The company set up 15 relay stations, eight of them at existing military posts. Beginning at San Antonio, the route crossed Texas to the Pecos River, then north skipping back and forth over the border between Texas and New Mexico to El Paso, north to Las Cruces, west across New Mexico and Arizona to Yuma, and across California to San Diego.

Passenger trade fell off as other lines within the Territory were established. Service was gradually cut back and in 1858 the Jackass Mail ceased to exist when a new contract was awarded the Butterfield Overland Mail Company.

The southwest was well served by John Butterfield, founder of American Express Company. Using much the same route as the Jackass Mail, he poured money and supplies into the entire route. He parleyed with the Indians, gaining their respect, and suffering little damage from them. The Southern Butterfield Overland Mail was curtailed by the Civil War. John Butterfield was then granted the contract for the Central Overland Mail service, which ushered in the stagecoach era. Butterfield is said to have met often with his stagedrivers, exhorting them to "Remember, boys, nothing on God's earth must stop the United States mail!" • nt

## Authors

R.S. Blewer (2413) and W. Beezhold (5112), "Non Linear Volume Expansion in Helium Implanted Erbium Metal Films," Vol. 19, No. 1, RADIATION EFFECTS.

J.R. Freeman (5241), "A Method for Computing the Transition from Ambipolar to Free Diffusion in a Decaying Plasma," Vol. 13, No. 1, JOURNAL OF COMPUTATIONAL PHYSICS.

R.C. Lincoln (5322), "Absolute Length Measurement at High Pressure," Vol. 44, No. 9, THE REVIEW OF SCIENTIFIC INSTRUMENTS.

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C.B. Norris (5113), "Optimum Design of Electron Beam-Semiconductor Linear Low-Pass Amplifiers — Part II: Output Capabilities," Vol. ED-20, No. 9, IEEE Transactions on ELECTRON DEVICES.

B.M. Butcher (5133), "Dynamic Response of Partially Compacted Porous Aluminum During Unloading," Vol. 44, No. 10, JOURNAL OF APPLIED PHYSICS.

R.E. Cuthrell and D.W. Tipping (both 5526), "Electric Contacts. II. Mechanics of Closure for Gold

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E.P. EerNisse (5112), "Extension of the Double Resonator Technique," Vol. 44, No. 10, JOURNAL OF APPLIED PHYSICS.

M.A. Gusinow (5215), "Effective Blackbody Temperature of High-Current Gas-Filled Flashlamps," Vol. 44, No. 10, JOURNAL OF APPLIED PHYSICS.

J.W. Nunziato (5131) and K.W. Schuler (5163), "Evolution of Steady Shock Waves in Polymethyl Methacrylate," Vol. 44, No. 10, JOURNAL OF APPLIED PHYSICS.

R.H. Ericksen (5314), "Room Temperature Creep of Borsic-Aluminum Composites," Vol. 4, No. 7, METALLURGICAL TRANSACTIONS.

P.A. Miller, J. Chang and G.W. Kuswa (all 5242), "Electron Beam Concentration Enhanced by a Laser-Produced Plasma," Vol. 23, No. 8, APPLIED PHYSICS LETTERS.

A.J. Toepfer (5242) and J.W. Poukey (5241), "Nonlinear Saturation of the Relativistic Beam-Plasma Instability in the Presence of Ion Density Fluctuations," Vol. 16, No. 9, THE PHYSICS OF FLUIDS.

## Death



Jim Marsh, head of Classification Division 3154, died suddenly following a heart attack on Dec. 10. He was 51. He had been employed at the Labs since 1951.

Survivors include his wife Jean and three children.





# Chemical Means of Coping

The word "drugs" strikes a certain note of terror in most of us, even as we take a pill or get a shot to alleviate most of our physical, and some of our mental, pains. Some drugs are legal, some aren't; some are physically addictive, some aren't. The people at the Drug Abuse Education and Coordination Center (it's one of the UCF agencies and Ken Smith, 3100, has been on its board of directors since it began some four years ago) are all too aware of our pill-popping propensities — our tendency to alleviate pain of any kind by whatever means — because, under certain conditions, abuse results. It's their job to prevent that abuse.

Whether it's caffeine or cocaine, nicotine or Nyquil, alcohol or amphetamines, aspirin or "acid," tranquilizers or "tea," overuse is the major problem. A drug is overused whenever it keeps someone from doing what s/he could do, being what s/he could be, or, in the terminology of the social scientist, "achieving one's potential." Overuse — that's abuse.

That's simple enough, at least in theory. More difficult — preventing that abuse. DAECC's basic premise is that abuse of drugs is a personal choice based on what is usually a highly complex set of personal circumstances and experiences. These include the person's view of himself, his perception of how other people view him and the alternatives he sees as open to him. In other words, some people are much more likely to become abusers than others.

Dave Ryther, the DAECC director, talks about these "addictive personalities." These are, he says, "the oral people, the ones who reduce or eliminate any pain by taking something orally, the ones who are in effect saying, 'I feel uncomfortable, physically or emotionally. I'll relieve that discomfort through oral intake.' A lot of people who rely on tranquilizers, cigarettes, beer, or martinis can identify themselves as oral people.

"We spend much of our time working with teenagers, preferably before they have a major drug hang-up. We help them directly, but equally important, we help them develop a more enlightened concept of parenthood — so they can someday keep their kids from having the same problems. And we spend a lot of time with educators and parents, the adults most involved in promoting healthy personalities in their kids.

"Healthy personality, in this context, means a low probability of choosing a chemical means of coping. You see, a kid looks for some path to fill his needs — it may be a healthy, low risk one, or it may be an unhealthy, high risk one, like drugs.

"His perception of the paths open to him generally depends on his parents. So we deal as often as possible with family groups — parents and children together. We think it works. Last year we worked with a few hundred kids who had been arrested for drug offenses. Sometimes we could work with the parents too. Seventeen percent of those kids got into trouble again, 5% with drugs. We also kept track of a hundred kids with whom we didn't work; 60% of those cases were in trouble again within a year — 35% with drugs.

"How about when the kid sees no path at all open to him? Well, there's suicide — and it's not uncommon. Or the kid may simply say 'to hell with it' and turn into a bully or a con man or a kind of extortionist to get what he wants — the 'I'm bad, but I'm going to get them anyway' syndrome. Again not uncommon.

"What we're trying to do in these parent-child groups is to improve family communications to the point where each one can tell the other that he cares what the other thinks, can show love, can show that he gives a damn.



DAVE RYTHUR, Director of the Drug Abuse Education and Coordination Center, uses the phone often. Given the subject, many callers prefer using the phone to protect their anonymity.

"We as a community can't make real progress toward a solution [to drug abuse] until we solve, or at least reduce, some of the problems associated with growing up. That's why we're working with kids and with the adults closest to the kids, helping them understand the things they can do to reduce the likelihood the kids will become addicts.

"And that's why we've got a program with Albuquerque Public Schools. The program is designed to produce a student who, when faced with a choice about drugs — and almost all of them are — will not have to make that choice while feeling rejected, starved for attention, or worthless. He won't have to feel his life is boring. He can face the choice knowledgeably. He cares about himself he knows that, although the adult world he's entering may be far from ideal, there are people who care about him and there are other ways than drugs to come up from down."

DAECC then sees drug abuse as a symptom of, or temporary solution for, underlying problems. And they're attacking those problems. •bh



## Speakers

H.R. Shelton (3132), Conference Chairman for ASTD Region 7 Sixth Annual Conference, welcome address; J.M. Hueter (3131), "Creativity — Choice or Chance?" at general session and leader of a Creativity Workshop; G.F. Padilla (formerly 3131, now 7145-1), leader of Apprenticeship Training Workshop, Oct. 10-12, Albuquerque.

Dorothy Gray (7631), "Navajo Indians — Their Culture," Hoover Jr. High 7th grade class, Oct. 5.

G.W. Hughes (9474), "Artificial Satellites"; H.D. Sivinski (5250), "Planetary Quarantine for Space Exploration," Eldorado High School science seminar, Oct. 10.

H.C. Monteith (9344), "Computer Science"; H.H. Patterson (1230), "Oceanography," Bernalillo Jr. High School Career Orientation Program, Oct. 11; Monteith, "The Kirlian Effect," Bernalillo High School science class, Oct. 22.

M.J. Landry (2441), "Lasers and Holography," Del Norte High School Junior Academy of Science, Oct. 15.

C.A. Pepmuller (3141), "Sharing Our Information Resources," Sandia Civitan Club, Oct. 19.

R.M. Jefferson (4761), "The Current Power Crisis," Manzano High School world problems class, Oct. 24.

H.R. Shelton (3132), "You're OK. I'm OK," National Secretaries Assn. Bosses' Luncheon, Oct. 24.

J.W. Reed (5644), "Sonic Booms," Manzano High School Aviation class, Oct. 30.

L.V. Rigby (1642), "What Kinds of Career Guidance are Albuquerque Kids Getting," New Mexico section of ASME, Oct. 24.

W. Schimmel (1543), "A Combination of Solar Energy and the Total Energy Concept — The Solar Community," ME Colloquium, Rice University, Oct. 26.

D.O. Smallwood (9332), "Waveform Synthesis for Matching Shock Spectra on Shaker Systems," IMOG Subgroup on Environmental Testing, Oct. 30-Nov. 1, LLL.

D.W. Bushmire (2431), "Principles of Compliant Bonding," Microelectronics Workshop, Collins Radio, Nov. 4-7, Dallas.

R.A. Graham (5133), "Pressure Dependence of the Piezoelectric Polarization of Lithium Niobate"; I.J. Fritz (5132), "Ultrasonic Wave Velocities as a Function of Hydrostatic Pressure in Phases I, II, and III of Polycrystalline Bismuth"; W.B. Gauster (5323) and I.J. Fritz (5132), "Elastic Constants of Compression-Annealed Pyrolytic Graphite as a Function of Pressure to 20 Kbar," IEEE Ultrasonics Symposium, Naval Post Graduate School, Nov. 5-7, Monterey, Calif.

A.B. Donaldson and W.P. Schimmel (both 1543), "Analysis of the Effects of Laser Nonuniformity and Associated Alignment Errors in the Flash Method of Measuring Thermal Diffusivity"; L.G. Rainhart (7122), R.U. Acton (5322) and A.B. Donaldson (1543), "Heat Transfer in High Temperature Opacified Fiber Insulation"; W.P. Schimmel and A.B. Donaldson (both 1543), "Effective Thermal Diffusivity for a Multi-Layer Composite"; W.P. Schimmel, "Analytical Solution for the Temperature Profile Induced in a Cylindrical Composite by a Pulsed Radiant Energy Source"; G.F. Wright, S.G. Beard (both 5628) and D.F. McVey (5626), "Temperature Measurement in a High-Temperature Carbon Multilayer Reentry Vehicle Heatshield"; W.H. McCulloch (1543), "Soil Burial of Radioisotopic Fuel Capsules"; R.C. Heckman (5322), "The Effects of Incident Energy Penetration and Temperature Measurements Involving In-Depth Viewing on the Results of Flash Thermal Diffusivity Measurements with Porous or Semi-Transparent Materials"; R.C. Lincoln (5322), "The High Temperature Thermal Diffusivity of Zirconium Carbide"; R.U. Acton, R.C. Lincoln and R.C. Heckman (all 5322), "Time at Temperature Effect in Carbon Insulators," XIII Conference on Thermal Conductivity, Univ. of Missouri, Nov. 5-7, Rolla.

"YOU KIDS behave or I'll send you to the principal's office." Marian Works, Chuck Main, and Mike Hitchko play teacher-student roles as a part of Project Focus. The DAECC-APS program is designed to develop in students a positive attitude toward themselves so they won't need drugs to cope. More info is available from Steve Stuart or Dave Ryther at 243-1319.





Wayne Hancock — 3153



Don Bliss — 7651

# MILEPOSTS

LAB NEWS

December 1973



Bob Casper — 2434



Ada Jane Akin - 5000



Ed Hawn — 7121



Rosalie Crawford — 1



Kenneth Dunbar — 5626



David Trapp — 9485



Kip Stanley — 7133



Joe Silva — 7513



Onella Allen — 9443



Leon Day — 9534



Dan Blazek — 7624



James H. Armstrong — 9351



Max Lopez — 7554



Clemente Valencia — 7512



Dick Clarkson — 8431





Murl Moore - 4117

15



Marion Williams - 7518

25



Joe Sieglitz - 7211

25



Donald Spatz - 1514

20



Allan Fine - 4711

20



Ruth Cowham - 7510

15



Vincent Domme - 7511

25



Bruce Caskey - 4115

15



Jack Carnoham - 7511

15



John L. Miller - 7311

15



Andy Railey - 7512

25



Jim Rhodes - 4113

25



Armand Fink - 1235

25



George Duffield - 1126

25



Betty Baros - 3148

20



Betty Malpas - 3144

10



Jennings Conant - 5221

25



Jim Enlow - 9472

15



B. D. McConnell - 7512

25



# feed back

To get a response to your comments and questions about Sandia Labs, complete a Feedback form (available near bulletin boards) and return it to the Feedback administrator. The substance of questions and responses of wide interest is published in LAB NEWS.

*Q. Why not close the place down on Dec. 24, if only to conserve energy?*

A. As was indicated in the Sandia Bulletin of Oct. 17, "it is expected and encouraged that employees will elect to take vacation" for the half-day to noon on Monday, Dec. 24, and that "limited service functions (only) will be planned." There are a few functions which must be maintained, although it is expected that whole organizations will be effectively closed down.

It is not considered desirable to direct employees to take vacation and this voluntary approach is thus being taken. Management is also allowing employees with no 1973 vacation accruals remaining to borrow a half-day against 1974 vacation credits. This means that all employees, except those whose job requirements necessitate their being at work, should be able to enjoy this four-day weekend.

—D. S. Tarbox (4200)

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*Q. Seeing LAB NEWS pictures of our long-term employees has made me curious. Who are our longest-term Sandians?*

A. As of October 1973, we have two employees with 30 years of service, William E. Caldes, Department Manager 9340, and Donald S. Dreesen, Section Supervisor in 9342. These are the only on-roll employees with service dates in 1943. Robert W. Henderson, Vice President 7000 and Ray B. Powell, Vice President 3000, have service dates in 1944 and will have 30 years of service in 1974. Three employees have service dates in 1945 — Richard A. Bice, Vice President 9000, Glenn A. Fowler, Vice President 1000, and William C. Elskes, Division Supervisor 7511. There are 52 on-roll employees with service dates in 1946 — 27 years of service in 1973.

—D. S. Tarbox (4200)

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*Q. What is Labs policy with regard to discussing and revealing to an employee his or her merit and salary position?*

A. The Labs has no stipulated policy under which supervision talks with each employee concerning his or her performance on an annual or periodic basis. However, an employee may obtain his performance rating by requesting it from his supervisor.

While this information is available upon such request, many supervisors will take the initiative to talk to employees in general or specific terms about their performance and salary position.

—D. S. Tarbox (4200)

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*Q. What happened to the plan to set up signal lights that would convert Eubank to a three and one lane arrangement during morning and evening rush hours?*

A. The existing two lane arrangement proved to be adequate to accommodate traffic. Further, cost was high and the control of three lanes of traffic entering the Base would be unduly difficult.

—R.E. Hopper (7500)

*Q. Bldg. 880 terrifies visitors. They can't find the room they are looking for and, once found, dare not stray very far. How about a distinctive paint stripe along each hallway to assist in locating a room?*

A. We are developing a plan to simplify directional problems in Bldg. 880 and, when construction in the SE quadrant is complete, 880 will have four straight-through N-S aisles and two E-W aisles. Some form of aisle identification will be employed.

—R.E. Hopper (7500)

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*Q. Where can I blow up my bike tires in the Tech Area?*

A. The Motor Pool recently installed an air hose on the northwest corner of Bldg. 890 for the sole purpose of airing bike tires. The regulator inside the building is set at a maximum of 80 pounds.

—R.E. Hopper (7500)

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*Q. Seems odd that people at SLA have a holiday on Oct. 22 while those at SLL are given the day after Thanksgiving. Why not let Sandians vote on the subject?*

A. In recent years industry has adopted "floating" holidays to give employees some freedom in selecting holidays more meaningful or suitable to them as individuals.

It is soon to be announced that beginning in 1974, Sandia will replace Good Friday with a designated holiday from the following list:

The employee's birthday  
Good Friday  
Rosh Hashanah  
Yom Kippur  
Friday after Thanksgiving  
The employee's service anniversary date  
Columbus Day  
Martin Luther King's birthday  
Admissions Day (in California)

Employees will be asked to select their designated holiday at the beginning of each calendar year. With the 24-day vacation plan at Sandia, employees have always been encouraged to take vacation time either in conjunction with holidays or to observe any holidays not observed as official Sandia holidays.

—D. S. Tarbox - 4200

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*Q. Sandia has one of the best programs for compensating members of the technical staff. In pay and fringe benefits, for example, Sandia certainly is competitive. There is one area, however, where I believe there is a deficiency: a staff member's only opportunity for promotion (other than pay raise) is into management. And being a good technical man is not necessarily a guarantee of being a good manager or vice versa. Yet, in principle, a staff member could win a Nobel Prize and still lack the privileges accorded a department manager (winning the Nobel Prize would certainly net him a promotion but again into management).*

*Has Sandia ever considered a program of promotion for staff members which might include a larger private office, more say in Labs affairs, etc., without direct management responsibility?*

A. We have considered establishing a

separate progression scheme (dual line of progression) for technical nonsupervisory staff employees, and have concluded that its advantages are not entirely compelling. Bob Garcia, manager of Employee Relations, conducted a survey of this matter in 1968 whose overall results did not encourage us. One lab, in particular, had very poor experience. They reported:

"Attempts to grant artificial status to scientists can raise more problems than are allayed. A number of years ago this organization used a number of fancy generic titles such as Chief Engineer and Principal Physicist which were semiformally announced when an appointment was made. The strife that resulted forced a quick retreat from the program."

There are semantic problems in arriving at titles. Whereas one person would consider a "Senior MTS" to be an acknowledged authority, another might consider "Senior" a recognition of length of service. Such ambiguities tend to render titles almost meaningless. In general, reputation and respect from colleagues appear to provide the most meaningful status.

Sandia currently provides other methods for recognizing technical contribution such as encouraging the staff to publish, sponsoring attendance at seminars and symposia throughout the world, and by providing staff support for those engaged in research and development.

As to the matter of a voice in Laboratories affairs, management certainly encourages suggestions. In the question of recognition, if you have any ideas on the matter, I would appreciate hearing them.

—D. S. Tarbox - 4200

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*Q. Some one million dollars is in the Credit Union Reserve, an accumulation made possible by the depositors and borrowers, yet the money belongs to no one. I don't question the need for a reserve, but members should have something to show for it. I've discussed this with CU officials, but no action has been taken. Is there anything Sandia can do about it?*

A. The members of the credit union, like the members of any cooperative, are the owners. In order to have a Federal Credit Union, the credit union must abide by the Federal Credit Union laws. The requirement for this reserve was established by law for the protection of the shareholdings of the credit union's members and the continued solvent operation of the credit union. This reserve is not idle cash. It has been invested in long-term government securities with a very good yearly return. The income from this investment has made it possible to offer above average returns and provide loans at below average rates, thus benefiting all members.

The above information was furnished by your Credit Union President. I trust it is responsive to your concern. As Sandia Laboratories Comptroller, I serve as the official liaison with the Sandia Laboratories Credit Union.

—R. S. Kern - 4100

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*Q. A suggestion: I've been using the blank reverse side of sheets of paper for rough drafts, scratch pads, doodling, etc. for more than a year and haven't drawn a pad from the stockroom in that time. This is a simple measure, and if most Sandians practiced it the savings would be significant.*



## Apprentices Build Unique Structure



SEVERAL kinds of framing construction are represented in this storage shed being built by apprentice carpenters. Instructor Frank Lesperance, left, gives the word to Jerry Smith, Al Ayott and Milton George (all 7513). The Plant Technician apprenticeship program requires 10,000 hours of classroom and field training.

Behind Bldg. 887 you can see a frame structure that is possibly the best built and most unique in Albuquerque. A training project for Plant Technician (carpentry) apprentices, the 10'x14' structure will eventually be used as a storage shed in Area III.

In the meantime, under the guidance of Frank Lesperance, three apprentices, Jerry Smith, Al Ayott and Milton George (all 7513), work on the project to learn every kind of framing carpentry. Each wall represents a different kind of framing, and three kinds of construction — hip and valley, gable, and short dutch gable — are used in the roof. Different window installations are also being used.

When training ends, the pitched roof will be removed, a flat roof installed, and the shed will be moved to Area III. It is mounted on skids.

Frank Norris (7551) is responsible for the apprenticeship classroom work, Frank Lesperance the field work. Plant Technician apprentice training administrator is Wayne Trump (3131).

The five-year training period includes some 1250 hours of classroom instruction and 8750 hours of on-the-job training. •dg

### JUNK • GOODIES • TRASH • ANTIQUES • KLUNKERS • CREAM PUFFS • HOUSES • HOVELS • LOST • FOUND • WANTED • & THINGS

**CLASSIFIED ADVERTISING**  
Deadline: Friday noon prior to week of publication unless changed by holiday.  
A maximum of 125 ads will be accepted for each issue.

**RULES**

1. Limit: 20 words
2. One ad per issue per person
3. Must be submitted in writing
4. Use home telephone numbers
5. For Sandia Laboratories and AEC employees only
6. No commercial ads, please
7. Include name and organization
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

#### MISCELLANEOUS

- BOAT trailer, Road Runner, will carry up to 14' boat, new tires, \$100. Manning, 2447 Rose Ave. NW.
- INDIAN Fetish, Zuni three-strand. Johnson, 299-4689.
- REMINGTON port. typewriter, \$25; old Japanese sewing basket; old doll buggy, \$10; old powder horn; old sword. Smitha, 266-9977.
- CROWN Graphic camera, Graflite, roll film holder, 16 4"x5" plate holders, case, Graflarger, floodlights, etc. Harrison, 299-2154.
- ELECTRIC 40" range; size 9-1/2 ski boots; 2 pr. ice skates. Fisher, 299-9235.
- SKI boots, sizes 1-1/2, 6-1/2 & 7; metal desk, 2-pedestal w/file; laundry tub, appliance style, new. Schwoebel, 298-4295.
- FRENCH provincial cherrywood double bed, springs, mattress, dbl. dresser w/mirror, night stand. Ackley, 296-7111.
- S&W Model 29, 6-1/2" barrel, .44 mag, new, unfired, \$275. Snodgrass, 268-8820.
- FIVE days of lift tickets, Jackson Hole, Wyo., \$25. Hanna, 299-1126.
- 8 SLIDING glass door, \$25; parts for '67 VW, fenders, bumpers, wheels. Wilkinson, 299-8327.
- ONE 165 SR-13" new Goodyear whitewall radial tire, orig. price \$50, sell for \$30. Vigil, 255-9076.
- TAKE over last 6 payments, European Health Spa membership, 1 yr. free. Palmer, 299-5082.
- 22 RIFLE, semi-automatic Marlin, model 99 tubular magazine, \$30. Anderson, 268-4188.

PING Pong table w/paddles, \$20; outdoor skates, \$3. Morris, 299-5978.

2 TIRES, steel belted radial Semperit, 225/70x15, used less than 4000 miles, sell for 2/3 of new price. Reif, 296-2179.

PIPE, used, galvanized, 1-1/4", 2 pieces: 21' & 7'3", OK for drinking water, will cut, 30 cents/ft. Lenz, 298-9121.

CORNET, Bundy B flat, appraised at \$100, will take less. Saylor, 299-9006.

SEARS Airequipt slide projector w/36-slide magazines & 100-slide circular mags; Westinghouse port. hair dryer; no reasonable offer refused. Houston, 299-4118.

BUNNIES, white w/brown ears, nose, tail, 9 wks. old, \$2.50. Vogel, 256-0975.

DINING table, mahogany, drop-leaf, open 42"x66", closed 42"x26", pads, \$150; Reese ball mount assembly, \$14. Sims, 293-6153.

WESTINGHOUSE oven, pink, built-in type, \$15; dbl. basin kitchen sink, white, mixer faucet, \$25; port. music stand, \$3. Moyer, 255-8807.

AKC Dachshund puppies, small std., \$75. Puccini, 265-9593 or 265-2232.

WIREHAired Fox Terrier puppies, AKC, born Nov. 29, male & female. Shaykin, 296-3659.

DOGHOUSE, large, insulated, clean, \$25. Syroid, 299-8256.

CHRISTMAS trees, any size, home delivery same day as cut, \$10 ea. Leave name & number at 265-5943 for return call. Russell.

SCHNAUZERS, AKC min., show quality, ready for Christmas. Sanchez, 298-7511 day, 294-7226 eve.

HO raceway mounted on 4'x8' board, lots of track & lots of cars, will hold for Christmas, \$25. Gammon, 268-1032.

NAVAJO Sand Paintings, 7 ea., made by Navajos, \$22-\$58 ea. McGee, 299-0661.

FOUR 6.00x12 tires, Firestone deluxe champion whitewalls, driven 300 miles. Clark, 294-

3112. WOODEN office desk, 5'x3'x28" high w/typewriter compartment, 3 lg. dwrs., center dwr., \$50; 14'x12' brown braided rug, \$10; 6'x9' red braided rug, \$5. Siska, 298-5756.

TRAIL bike (motorcycle) trailer, sturdy, full-size tires, tire-securing chains, handlebar straps, holds 3, \$125. Fox, 299-9031.

TWO refrigerators: GE, Westinghouse, \$40 choice. Archuleta, 2981 Clover Lane SW, 877-6645.

12-TON hydraulic jack, Walker J-945, list \$68, sell for \$32. Conant, 256-0012.

SMITH-CORONA std. typewriter, elite, \$25. Hurley, 298-4440.

TARGET rifle, .22 cal. Rem. 513T, w/case & all accessories for competition; Gibson elec. guitar, case & Fender Princeton amplifier. Hickerson, 268-7605.

44 MAGNUM Marlin, new, \$110; puppies, Shepherd Husky Elkhound cross, \$10. Cyrus, 898-4038.

MINIATURE Schnauzer puppies, AKC, 8 wks. old. Forsythe, 299-2785.

SLIDING glass patio door, 60" wide, 80" high, \$50. Morton, 296-6108.

POLAROID camera, Color Pack II w/case. Hole, 255-1444.

KEESHUND pups, male or female, \$20 ea.; standing closet, \$45. Marquez, 877-8899.

RECORD changer, 4-spd. Soundesign (BSR), \$21. Trump, 299-5162.

ENLARGER lens, 75mm Omegar f4.5 to f32. Denney, 268-0004.

MOBILE home, Four Hills Trailer Park, 3-bdr., 12x60. Hollingsworth, 255-1065.

PORTABLE sewing machine, straight stitch w/buttonholer & carrying case, newly cleaned and adjusted, \$50; wood sewing machine cabinet, \$35. Franklin, 869-2130.

LADY'S diamond wedding set, galaxy center stone surrounded by 16 diamonds in unusual 3-ring setting. Roberts, 293-9726.

CAR seat; stroller; boxing gloves; imported material & lining; party dresses, size 5-6. Herther, 298-4823.

REFRIGERATOR, 14 cu. ft. Westinghouse, 1963 model, \$75 or best offer. Corwin, 298-0113.

WASHER & dryer, Norge matched set, used very little, \$175 the pair. Dean, 296-3264.

#### WORK WANTED

BEGINNING guitar students wanted, North Valley, 1/2-hour lesson, \$2. Call LaDona, 344-0738.

#### WANTED

USED butane tank, 100 lb. or smaller; used 2-1/2 or 3-gal. gas tank for Evinrude outboard motor. Leeman, 299-9149 after 6.

PING Pong table, folding, wheels, good condition. Seknan, 293-7961.

MTS's work on solar and other energy systems. Stromberg, Org. 4736.

185-190 cm fiberglass skis. Harvey, 344-8344.

MG-TD, any condition, running or not, or just for parts. Sander, 299-5761.

#### REAL ESTATE

3-BDR. & DR, fruit trees, near base & schools, assume 6-3/4% mortgage. Harris, 1020 Calif. SE, 266-2269.

160 ACRES of land, 1 mile N of Estancia, natural gas & elec. available; 5 lots in town of Moriarty, all utilities, \$5000; child's tricycle, \$8. Liston, 281-3283.

1/3 of 10% interest in subdivision NW of Las Vegas, 10-1 profit potential, 200 pine covered acres. McGuckin, 299-1342.

FOUR Hills, 4-bdr., 2-bath, LR, DR, FR, many built-ins, carpeted throughout, near Sandia, low 50's. Wilson, 299-7502.

#### TRANSPORTATION

'65 INTERNATIONAL Travelall, 1200, 4-spd., PB, PS, AC, positraction, \$1000. Kepler, 298-5652.

'71 OLDS Delta 88, 2-dr. HT, PS, PB, AT, AC, gold w/white top, make offer. Eissele, 265-2780.

'62 FALCON sedan, 6-cyl., straight-stick, white w/red leatherette interior. Rose, 298-4849.

'72 BRONCO 4-wd, extras, 20,000 miles, \$2995. McHaffie, 821-2689 after 6:30.

'72 SUZUKI mini-bike, 50cc, 1300 miles, one owner, \$200. Brewster, 298-6166.

'60 FORD pickup; '65 Plymouth Valiant' '72 Opel 1900. All under book. West, 281-3460.

'68 INTERNATIONAL Travelall, 4-spd., AC, PS plus many other extras, \$1450. Brown, 299-5360.

'66 SCOUT 800 4x4, new tires, many extras, \$1250. Davis, 266-7246.

'68 SCOUT 4x4 V8, AC, carpet, low mileage, new battery. Scully, 299-1083.

'67 ISLANDER motor home, under 30,000 miles Graham, 265-1363.

207-POUND 360 Yamaha MX, many novelties, \$1095, take lathe or smaller dirt bike in trade. Watterberg, 294-6759.

'69 DODGE Charger SE, PS, PB, AT, air, \$995 or best offer. Gallegos, 898-8213.

#### LOST AND FOUND

LOST — Rx sunglasses in case, Rx glasses w/grey plastic frames, white coral dangle earring, "Return to Vision" textbook, car keys on ring, 20-yr. award dangle earring, keys on ring, lady's Orris white gold wrist watch, gold button earring. LOST AND FOUND, Bldg. 832, tel. 264-3441.

FOUND — Silver Kwikset key, Ford car key, lady's black leather gloves, silver hoop earring for pierced ear. LOST AND FOUND, Bldg. 832, tel. 264-3441.



# Kids Christmas Party Tomorrow

WITH HOLIDAY parties of Sandia organizations dominating the Club calendar for the rest of the month, Happy Hours have moved into the main lounge area — no Friday buffets through December. However, special prices (cheap) will be in effect and entertainment is scheduled in the lounge. Tonight, folksingers Carl and Jerry will entertain; next Friday, Dec. 21, Don and Jed are on; and then on Dec. 28, Denny Gallegos will have the stage.

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**KIDS CHRISTMAS PARTY**, an annual affair at the Club, starts at 9:30 a.m. tomorrow with a bunch of clowns performing and doing magic tricks with the crowd in the ballroom. A puppet show by Mary Kay and Ron Day will follow and then Santa Claus will make a special appearance with goodies for all the little ones.

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**NEW YEAR'S EVE** at the Club is always a blast — dancing upstairs and downstairs, champagne, funny hats, balloons, noisemakers and a midnight breakfast. Sol Chavez and the mighty Duke City Brass will be upstairs, the Wildman Bob Banks and trio downstairs. Tickets go for \$7.50 per couple for members and they go quickly. Get yours now.

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**BASKETBALL BUSES** from the Coronado Club to University Arena for all seven of the WAC conference home games — that's the plan, and here's how it will work if interest warrants it. Buy a ticket, for \$5.25, good for rides to and from each of the seven games. The bus will leave a half hour before game time, deliver you to the arena door and bring you back after. You beat the parking problem and ride with friends. By the way, anyone can buy a ticket. They are on sale now at the Club office. Deadline is Dec. 28. Julian Lovato (4115), ext. 6353, has answers to questions.

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**EVERYONE** is invited to the Mazatlan post-trip meeting when the tanned travelers show slides and remember the good times at the Club's favorite vacation spot. It's set for Wednesday, Jan. 16, 7:30 p.m. Everyone is also invited to the Hong Kong briefing trip — movies and slides — on Tuesday, Jan. 22. Deadline for signing up for this one has been extended to Jan. 25. Brochures available at the Club office.



SANTA CLAUS, who will put in a special appearance at the Kid's Christmas party at the Club tomorrow at 9:30 a.m., congratulates Sandia decorations committee members Pat Milsap and Elizabeth Lee on the Club holiday decorations. Ben Benyak has been the Club's Santa for the past 10 years.

## Events Calendar

Dec. 14 — Six Guns Hockey vs. Oklahoma City, 7:30 p.m.; Dec. 16 — vs. Tulsa, 7 p.m.; Dec. 19 — vs. Omaha, 7:30 p.m.; Dec. 23 — vs. Dallas, 7 p.m.; Dec. 30 — vs. Omaha, 7 p.m.; Tingley Coliseum.  
Dec. 14-16 — Old Town Studio, "Bell, Book, and Candle," 8 p.m.  
Dec. 15 — Albuquerque Symphony Orchestra, "A Christmas Festival," Civic Auditorium, 8:15 p.m.  
Dec. 15 — Migrant Theater, "Punch & Judy" puppets, all ages, 2 p.m.; Dec. 29 — "Bethlehem" puppet show for age 7 & over, P.E.R. Center, 1417 Central SE.  
Dec. 16 — NM Mt. Club, snowshoe hike, 6 miles, up Tree Springs trail in Sandias, call Bob Babb, 256-9016.  
Dec. 18 — Sitzmarker Ski Club meeting, 7:30 p.m., Red Dog Dan's.  
Dec. 20 — NM Cross Country Ski Club meeting, hospitality room at Ed Black Chevrolet, 7:30 p.m.  
Dec. 21 — UNM Basketball vs. Texas Tech;  
Dec. 28-29 — Lobo Invitational, Bradley, Minnesota, Columbia, UNM Arena, 7:30 p.m.  
Dec. 21-23 — "Little Match Girl," musical mime show by Mime Experiment Co., Rodey Theater, UNM, 8 p.m.  
Dec. 22 — NM Mt. Club, Canyon Estates Trail, 4-7 miles, Western Skies, 9 a.m.

Dec. 23 — Las Posadas, Old Town Plaza.  
Dec. 24 — Kachina or Deer Dance, Taos Pueblo; Dec. 25 — Buffalo, Deer, Harvest, Social, Basket, Rainbow, Matachines Dances, midnight Mass following dances, Jemez, Santa Ana, San Felipe and Santo Domingo Pueblos; Dec. 26 — San Juan Fiesta, turtle dance, San Juan Pueblo; Matachines Dance, Taos Pueblo; Dec. 31 — Deer Dance, Sandia Pueblo.  
Dec. 24 — Luminaria Tour, check newspapers for departure.  
Dec. 26-31, Jan. 1 — Albuquerque Civic Light Opera presents "Carnival" 8:15 p.m., Popejoy Hall.  
Jan. 1 — NM Mt. Club, La Bajada Hill, 4 miles, Gulf Mart, 9 a.m.



### Next LAB NEWS Jan. 4

Because of the holidays, next issue of LAB NEWS will be Jan. 4. Deadline for classified ads for this issue is Wednesday noon, Dec. 26.